

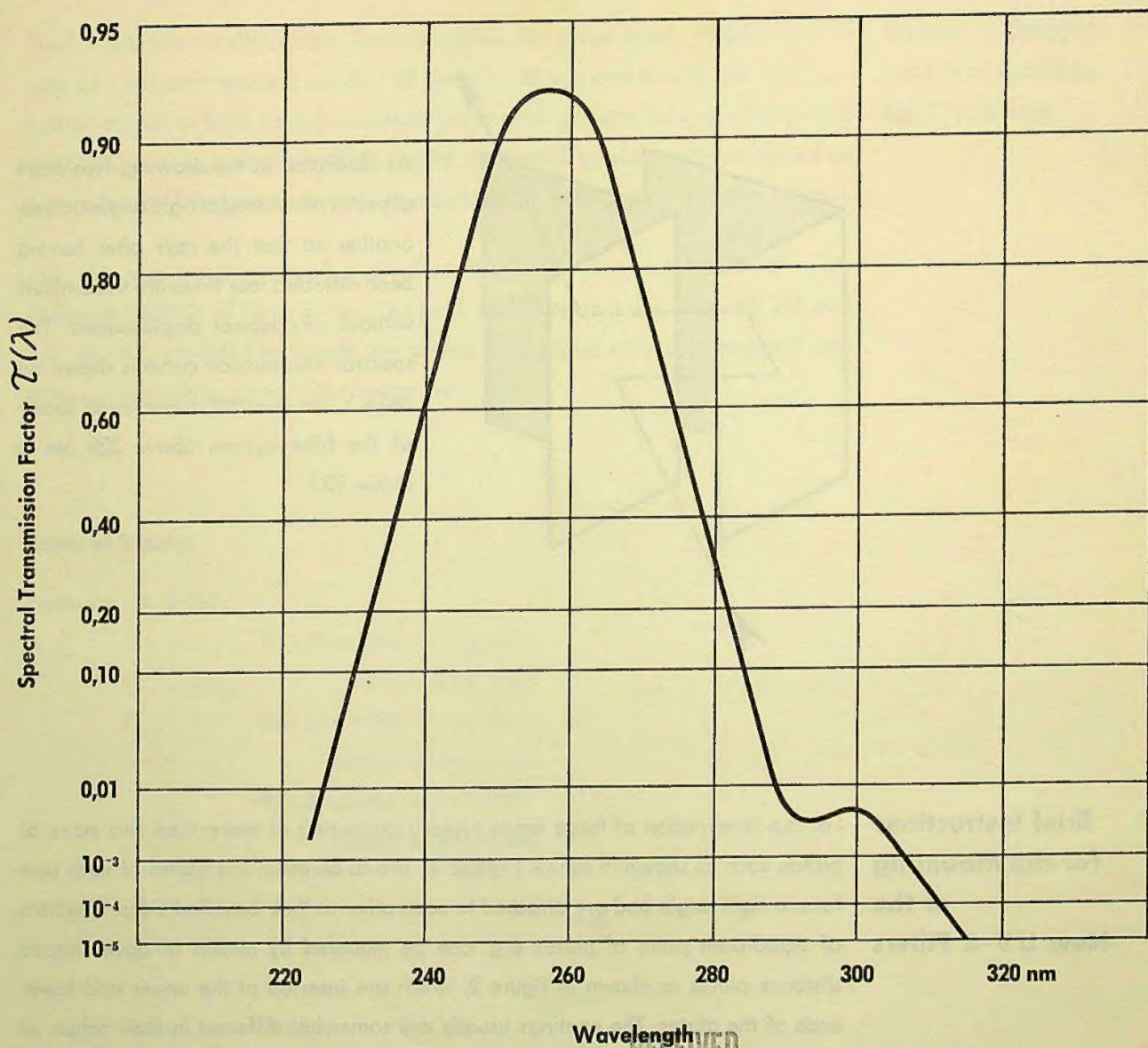
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Interference Reflection Filter UV-R-250

Transmission Curve of a UV-R Filter (for 4 Reflections under 45°)



Wavelength
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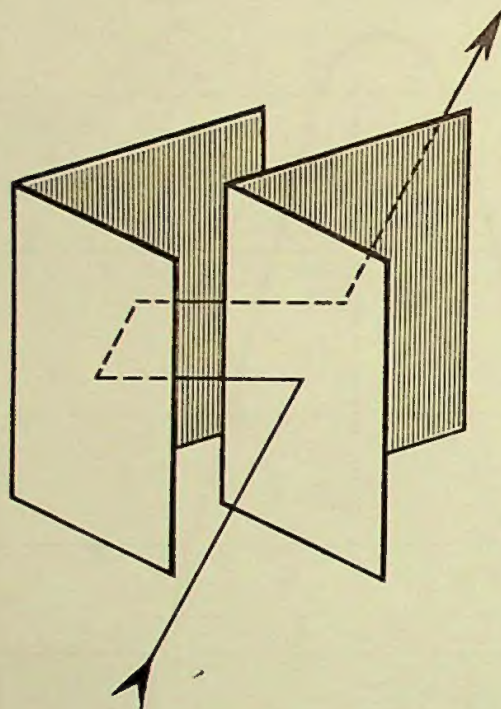


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Description and Properties

For various applications intense and selective radiation in the UV-region at about 250 nm is required, but which should be free from radiation of longer wavelengths. Up to now no high transmission filter was available providing sufficient elimination of the visible and infra-red spectral regions. The use of multilayer interference coatings evaporated on black glasses provides the possibility of obtaining mirrors of high and selective reflectivity in the UV-region.



As illustrated in the drawing, two pairs of plates are placed at right angles to one another so that the rays after having been reflected four times are transmitted without any lateral displacement. The spectral transmission curve is shown on page 1. The spectral transmission factor of the filter system above 320 nm is below 10^{-5} .

Brief Instructions for the Mounting of the New UV-R Filters

For the illumination of large areas systems consisting of more than two pairs of plates, such as shown in figure 1 (page 4), are to be used. The plates of each pair form a right angle and are attached to each other at their bevelled sides. A system of equidistant pairs of plates e.g. can be mounted by means of dove shaped distance plates as shown in figure 2, which are inserted at the upper and lower ends of the plates. The coatings usually are somewhat different in their colour of reflection. Therefore, if plates coated on both sides are used, they should be assorted to colours as is demonstrated in figure 1 (B_1 , B_2). It has been determined that the properties do not change over a time of more than two years if the filter plates are kept relatively dry even without any special protection. However, fingerprints on the coatings must be avoided. Careful cleaning with soft cloth would not be detrimental to the filters.

It is suggested to cover the filter system with quartz plates or quartz lenses in order to protect it from dust and humidity. Suitable arrangements are shown in figures 3a and 3b. The path of a bundle of rays when passing through the filter system 3b can be seen from figure 4. When looking through the filter the sun can be faintly seen. Therefore, adjustment of the system can be controlled visually.

UV-R Filters are also available for 280 and 310 nm. The transmission curve is similar to that of UV-R-250.

The UV-R filters are delivered in separate plates. The plates are polished to a thickness of 1 mm and the sizes are 40×30 mm, 50×10 mm and 80×30 mm. They are coated on one or both sides to customer's discretion and one long side is bevelled at 45 °. Since they are not protected careful handling is necessary. Plates coated on both sides lend themselves to systems consisting of more than two pairs of plates.

The maximum transmission of a complete filter system is greater than 70%. The halfband width is of 30 to 50 nm. The peak transmission point is at 250, 280 and 310 nm. It is provided to supply the coated filter plates only and assembly into filter units should be done by the customers.

Forms of Supply and Instructions for Ordering

Forms of Supply:

Plates for UV-R-250:

40×30 coated on one side
coated on both sides
50×10 coated on one side
coated on both sides
80×30 coated on one side
coated on both sides

Illustrations of construction and applications of UV-R filters can be seen on the verso.

Figure 1

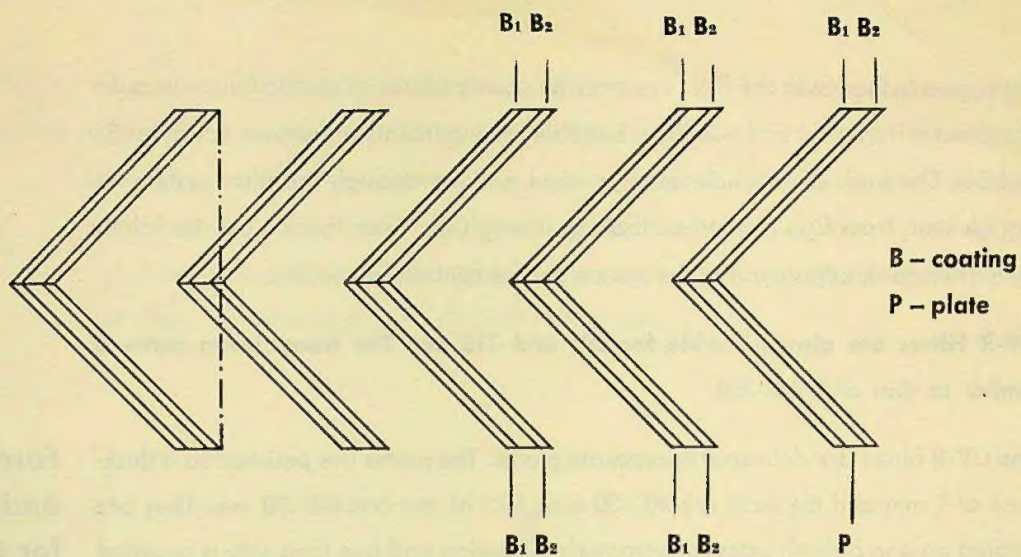


Figure 2

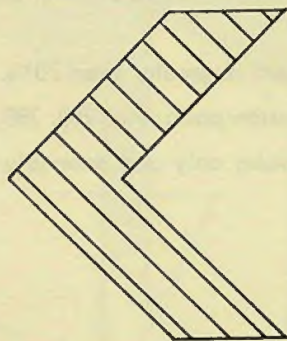


Figure 3

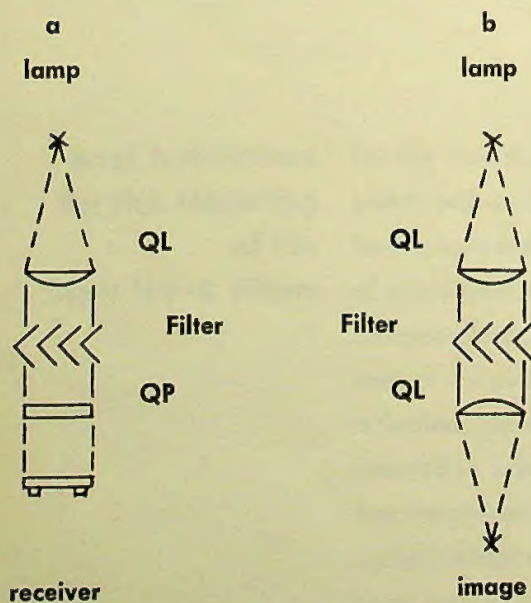
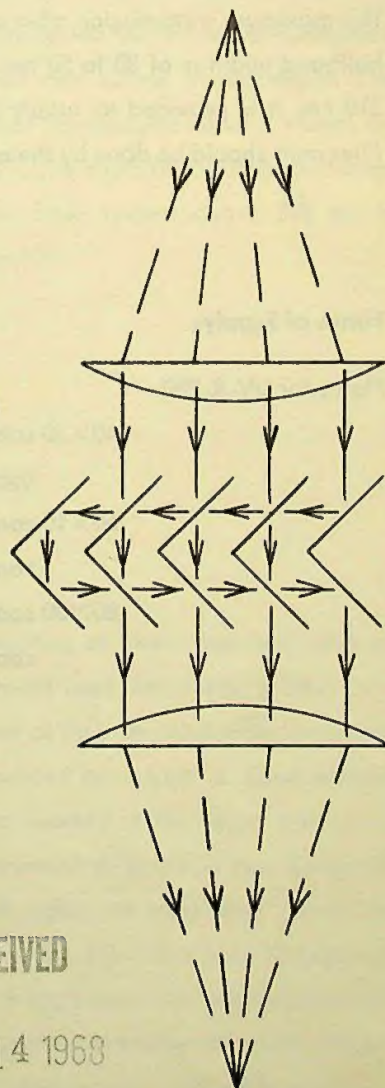


Figure 4



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